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SOCIETY RECORDS • ASME ANNUAL AM-5 • JANUARY 1974

indexes to 1973 publications

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Series B, *Journal of Engineering for Industry*
Series C, *Journal of Heat Transfer*
Series E, *Journal of Applied Mechanics*
Series F, *Journal of Lubrication Technology*
Series G, *Journal of Dynamic Systems, Measurement and Control*
Series H, *Journal of Engineering Materials & Technology*
Series I, *Journal of Fluids Engineering*
Applied Mechanics Reviews, monthly
Applied Mechanics Reviews, Annual Index, 1972

Publications Issued in 1973

BOOKS AND REPORTS

AMD—Vol. 1 Isolation of Mechanical Vibration, Impact, and Noise
AMD—Vol. 2 1973 Biomechanics Symposium
AMD—Vol. 3 Rock Mechanics Symposium
AMD—Vol. 4 Mechanics and Sport
AMD—Vol. 5 Surveys of Research in Transportation Technology
AMD—Vol. 6 Numerical Solution of Nonlinear Problems
Anthology of Rail Vehicle Dynamics-Axles, Wheels, and Rail-Wheel Interaction—Vol. III
1973 Rail Transportation Proceedings
Learning Systems
Flexible Rotor-Bearing System Dynamics
Part III—Unbalance Response and Balancing of Flexible Rotors in Bearing
CIMAC 10th International Congress on Combustion Engines
1973 Cavitation and Polyphase Flow Forum
Flow Studies in Air and Water Pollution
Fluid Mechanics of Mixing
Proceedings of the Sixth Symposium on Thermophysical Properties
Dry and Wet/Dry Cooling Towers for Power Plants
Recommended Guide for the Prediction of the Dispersion of Airborne Effluents—Second Edition
Impact of Competitive Technology on Engineering Management
SECOND INTERNATIONAL CONFERENCE ON PRESSURE VESSEL TECHNOLOGY
Part I—Design and Analysis
Part II—Materials, Fabrication and Inspection
Companies Holding Certificates of Authorization for Use of Code Symbol Stamps—1973 Edition
Proposed Standard Code for Concrete Reactor Vessels and Containments (Proposed Section III, Division 2)
ASME Orientation and Guide for Use of Metric Units—Third Edition

How To Find Papers Presented at 1973 ASME Meeting

The technical programs of the meetings of the Society and of its Professional Divisions have been published in MECHANICAL ENGINEERING and may be located by consulting the index on page SR-23. Many of these papers will be published in MECHANICAL ENGINEERING or the *Transactions* and may be located by reference to the indexes of these publications.

Currently Available ASME Publications

ASME members may purchase most of the publications listed below at a 20 percent discount. Handling and mailing charges are added to price when payment does not accompany order.

American National Standards

ELEVATOR CODES & GENERAL STANDARDS

A13.1—1956 Scheme for the Identification of Piping Systems (L33) $2.00
A17.1—1971 Elevators, Dumbwaiters, Escalators and Moving Walks (With Supplement) (A47/A48) $12.50
A17.1a—1972 Supplement Only (A48) $1.50
A17 Guide Evacuation of Passengers from Stalled Elevators (Not an ANSI Standard) (A70) $2.00
A17.2—1960 Practice for the Inspection of Elevators-Inspectors' Manual (With 1965 and 1967 Addenda) (A49) $5.25
1965 Addenda only (A50) $1.00
1967 Addenda only (A51) $1.50
A40.5—1943 Threaded Cast Iron Pipe for Drainage, Vent and Waste Services (M22) $2.00
A40.8—1955 National Plumbing Code (Withdrawn by ANSI) (L10) $6.00
A90.1—1969 Manlifts (With Supplement) (B8) $3.00
A90.1a—1972 Supplement Only (B14) $1.00
A112.1.2—1973 (R—1942) Air Gaps in Plumbing Systems (J41) $2.50
A112.6.1—1972 Supports for Off-the-Floor Plumbing Fixtures for Public Use (J43) $3.00
A112.11.1—1968 Self-Contained, Mechanically Refrigerated Drinking-Water Coolers (J39) $2.00
A112.18.1—1971 Finished and Rough Brass Plumbing Fixture Fittings (J39) $2.50
A112.19.1—1973 Enameled Cast Iron Plumbing Fixtures (J11) $3.00
A112.21.1—1968 Floor Drains (J40) $2.00
A112.21.2—1971 Roof Drains (J2) $2.50
A112.26.1—1969 Water Hammer Arresters (K20) $2.50
A113.1—1964 (R1971) Mechanised Parking Garage Equipment (M54) $4.50

SCREW THREADS, PIPE THREADS & CYLINDRICAL PARTS

B1 Report (1972) ISO Metric Screw Threads (Not an ANSI Standard) (N46) $4.00
B1.1—1960 Unified Screw Threads (M28) $6.00
B1.1a—1968 Unified Screw Threads-Metric Translation (M29) $3.50
B1.2—1966 Gages and Gaging for Unified Screw Threads (N58) $6.00
B1.5—1973 Acme Screw Threads (N27) $6.00
B1.7—1965 (1972) Nomenclature, Definitions and Letter Symbols for Screw Threads (L11) $2.75
B1.8—1973 Stub Acme Screw Threads (N28) $4.00
B1.10—1958 Unified Miniature Screw Threads (N25) $3.00
B1.11—1958 Microscope Objective Thread (N20) $2.00
B1.12—1972 Class 5 Interference-Fit Thread (N32) $2.50
B1.16—1972 American Gaging Practice for Metric Screw Threads (N26) $4.50
B2.1—1968 Pipe Threads (Except Dryseal) (L18) $4.25
B2.2—1968 Dryseal Pipe Threads (M36) $4.25
B2.4—1966 Hose Coupling Screw Threads (K14) $2.75
B4.1—1967 Preferred Limits and Fits for Cylindrical Parts (L22) $3.00

MACHINE TOOLS, COMPONENTS, ELEMENTS, PERFORMANCE & EQUIPMENT

B5.1—1949 T-Slots-Their Bolts, Nuts, Tongues and Cutters (M34) $3.00
B5.5—1959(R1972) Rotating Air Cylinders and Adapters (L31) $2.00
B5.8—1972 Chucks and Chuck Jaws (J24) $4.00
B5.9—1967(R1973) Spindle Noses for Tool Room Lathes, Engine Lathes, Turret Lathes and Automatic Lathes (M10) $3.50
B5.10—1963(R1972) Machine Tapers (L4) $3.50
B5.11—1973(R1964) Spindle Noses and Adjustable Adapters for Multiple Spindle Drilling Heads (M8) $3.00
B5.16—1952(R1972) Accuracy of Engine and Tool Room Lathes (J4) $3.00
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B6.7—1967 Tooth Proportions for Fine-Pitch Involute Spur and Helical Gears (M26) $2.00
B6.9—1956(R1962) Design for Fine-Pitch Wormgearing (J26) $2.00
B6.10—1954 Gear Nomenclature (K1) $2.00
B6.11—1956 Inspection of Fine-Pitch Gears (K17) $3.50
B6.12—1964 Nomenclature of Gear-Tooth Wear and Failure (L12) $2.00
B6.13—1956 System for Straight Bevel Gears (M20) $2.50
B15.1—1972 Safety Standard for Mechanical Power Transmission Apparatus (B9) $3.50

PIPE FLANGES & FITTINGS

B16.1—1967 Cast Iron Pipe Flanges and Flanged Fittings 25, 125, 250 and 800 LB (J17) $3.50
B16.3—1971 Malleable-Iron Threaded Fittings, 150 and 300 LB (L5) $3.00
B16.4—1971 Cast Iron Threaded Fittings, 125 and 250 LB (J22) $3.00
B16.5—1968 Steel Pipe Flanges and Flanged Fittings (150, 300, 400, 600, 900, 1500 and 2500 LB) Including Reference to Valves (With Errata and Addenda) (M15/M17) $6.00
B16.5a&b—1971 Addenda only (M17) $1.00
B16.9—1971 Factory-Made Wrought Steel Buttwelding Fittings (M14) $3.00
B16.10—1957 Face-to-Face and End-to-End Dimensions of Ferrous Valves (J31) $2.50
B16.11—1966 Forged Steel Fittings, Socket-Welding and Threaded (M16) $2.50
B16.12—1971 Cast-Iron Threaded Drainage Fittings (J21) $3.00
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B16.18—1972 Cast Bronze Solder-Joint Pressure Fittings (J15) $3.00
B16.20—1963 Ring-Joint Gaskets and Grooves for Steel Pipe Flanges (L30) $2.00
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B16.22—1973 Wrought Copper and Bronze Solder-Joint Pressure Fittings (M30) $3.00
B16.23—1969 Cast Bronze Solder-Joint Drainage Fittings—DWV (J14) $4.00
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B16.30—1969 Unfired Pressure Vessel Flange Dimensions (J27) $3.00
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B18.2.2—1972 Square and Hex Nuts (M43) $4.00
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B18.6.4—1966 Slotted and Recessed Head Tapping Screws and Metallic Drive Screws (N21) $5.25
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B18.12—1962 Glossary of Terms for Mechanical Fasteners (M46) $4.75
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B18.17—1968 Wing Nuts, Thumb Screws and Wing Screws (J5) $3.00
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CONVEYORS, FIRE-HOSE COUPLINGS, WASHERS & TRANSMISSION CHAINS

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B29.7—1971 Malleable Iron Detachable Link Chain and Attachments (M18) $4.00
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B29.13—1972 700 Class Pintle Chains, Attachments and Sprocket Teeth (M64) $3.00
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B30.2.0—1967 Overhead and Gantry Cranes (B11) $3.00
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B30.15—1973 Mobile Hydraulic Cranes (B17) $4.50
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Booklet containing cases in effect January 1, 1970.....$11.00
Subscription to Interpretations
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ASME Standards

APS—1 Recommended Guide for the Control of Dust Emissions—Combustion for Indirect Heat Exchangers 1968 $2.50
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APS—2 Recommended Guide for the Control of Oxides of Sulfur (With Supplement) 1970 $3.00
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Draft ASME code for Pumps and Valves for Nuclear Power 1968 (With 1970 Addenda) $5.00
Addenda only $2.00
ASME Guide for Gas Transmission and Distribution Piping Systems[1] (With 3-year subscription to Supplements) $50.00

Books and Reports

APPLIED MECHANICS

Applications of Holography in Mechanics. 1971. $7.50
Applied Mechanics Aspects of Nuclear Effects in Materials. 1971. $20.00
Applied Mechanics Surveys. 1966. Hardbound. $37.50
Biomechanics Symposium—AMD-Vol. 2. 1973. $12.00
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Dynamic Response of Biomechanical Systems. 1970. $15.00
Dynamics of Composite Materials. 1972. $12.00
Dynamics of Structured Solids. 1968. $7.00
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Isolation of Mechanical Vibration, Impact, and Noise—AMD—Vol. 1. 1973. $25.00
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1972 Rail Transportation Proceedings. 1972. $25.00
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Reliability and Maintainability (Reprinted from Mechanical Engineering). 1966. $2.00
1968 Reliability and Maintainability Conference Proceedings—"Annals of Assurance Sciences". 1968. Hardbound. $27.00
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BIOMECHANICS

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Recommended Guide for the Prediction of the Dispersion of Airborne Effluents —Second Edition. 1973. $6.00
1968 National Incinerator Conference (With Discussion Booklet). 1968. $20.00
1970 National Incinerator Conference (With Discussion Booklet). 1970. $25.00
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Survey of Disposal of Industrial Wastes by Combustion
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LUBRICATION/WEAR

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Role of Viscosity in Lubrication. 1960. $5.50
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Viscosity of Lubricants Under Pressure. 1954. $4.00

MANAGEMENT

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Engineering Computer Software: Verification, Qualification, Certification. 1971. $12.50
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2¼ Chrome 1 Molybdenum Steel in Pressure Vessels and Piping—A Current Evaluation. 1972. $9.50

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Frank Lillian Gilbreth, Partners for Life, 1949. Hardbound. $6.50
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